UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2002/00376

April 30, 2003

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on the Myrtle Creek and Tri-City Sanitary District Wastewater Treatment Plant Improvement, South Umpqua River, Douglas County, Oregon (Corps No. 200100868)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) for the Myrtle Creek and Tri-City Sanitary District Wastewater Treatment Plant Improvement, Douglas County, Oregon. The Corps of Engineers (Corps) determined that the action may adversely affect Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch),* and requested formal consultation on this action. NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize the continued existence of OC coho salmon.

Pursuant to section 7 of the ESA, NOAA Fisheries has included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary and appropriate to minimize the potential for incidental take associated with this project. The interrelated activity of discharging effluent through this new diffuser is analyzed in this Opinion for the purpose of determining jeopardy, but, because of the uncertainty of discharge contents, the discharged effluent is not included in the incidental take statement for this Corps permit. Any effluent discharged is subject to take prohibitions under section 9 and rules promulgated for section 4(d) of the ESA. NOAA Fisheries acknowledges the Myrtle Creek and Tri-City Sanitary District may causetake of OC coho salmon as the result of the effluent discharge.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action will adversely affect designated EFH for coho salmon and chinook salmon (*O. tshawytscha*). As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days after receiving an EFH conservation recommendation.

Questions regarding this letter should be directed to Ken Phippen of my staff in the Oregon Habitat Branch at 541.957.3385.

Sincerely,

For Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Ed Emerick, ODSL
Jim Brick, ODFW
Steve Wille, USFWS

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Myrtle Creek and Tri-City Sanitary District Wastewater Treatment Plant Improvement,
South Umpqua River, Douglas County, Oregon
(Corps No. 200100868)

Agency: U.S. Army Corps of Engineers

Consultation Conducted By: NOAA's National Marine Fisheries Service, Northwest Region

Date Issued: April 30, 2003

For Michael R Crouse

Issued by: __________________
D. Robert Lohn
Regional Administrator

Refer to: **2002/00376**

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1. INTRODUCTION

1.1 Background

On April 16, 2002, the Army Corps of Engineers (Corps) requested formal consultation under section 7 of the Endangered Species Act (ESA) on issuance of a permit under section 404 of the Clean Water Act. The applicant, City of Myrtle Creek and Tri-City Sanitary District (MC/TCSD), proposes to construct an effluent outfall, build a temporary causeway to construct the effluent outfall, and remove an existing concrete structure in Myrtle Creek. This consultation was originally initiated by the Department of Agriculture's Rural Development (RD) agency, but was later withdrawn when the City of Myrtle Creek decided to seek funding from other sources. NOAA's National Marine Fisheries Service (NOAA Fisheries) reviewed the materials provided by the RD and the Army Corps of Engineers (Corps), which included a cover letter, a biological assessment (BA), environmental assessment (EA), and additional supporting documents, and NOAA Fisheries conducted several site visits, reviewed the application with the applicant, and discussed the proposal with Oregon Department of Fish and Wildlife (ODFW) staff. NOAA Fisheries concluded that Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*) juveniles may occur within the project area during the in-water work window, and therefore implementation of this project is "likely to adversely affect" (LAA) OC coho salmon.

The EA (2001) described the reason MC/TCSD is initiating this upgrade to their facilities. Due to their continued inability to remain in compliance with the Oregon Department of Environmental Quality's (ODEQ) discharge requirements, MC/TCSD was required to change their effluent outfall location. A non-compliance memorandum was sent to MC/TCSD from ODEQ identifying the problem with the dilution ratio being too low to achieve a regulatory mixing zone in Myrtle Creek during the low stream flows of summer (EA 2001). This low dilution ratio caused extremely adverse conditions within the lower 300 feet of Myrtle Creek during August 2001. High chlorine levels in the effluent water killed algae, macroinvertebrates, and fish. A dead juvenile OC coho salmon was collected from within this affected area. To protect OC coho salmon and achieve compliance with the ESA prohibitions of take, the MC/TCSD rerouted their effluent to the Myrtle Creek golf course during the period of low water. The proposed, long-term solution is to move the effluent outfall to allow it to mix with the greater flow of the South Umpqua River (EA 2001). The new plant is also expected to provide better water treatment in to achieve higher water quality standards.

In Oregon coastal streams north of Cape Blanco, including the South Umpqua River and Myrtle Creek, the NOAA Fisheries listed OC coho salmon under the ESA as threatened on August 10, 1998 (63 FR 42587). Protective regulations for OC coho were issued by NOAA Fisheries under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402.

NOAA Fisheries prepared this biological opinion (Opinion) to address effects of the proposed project on this species. The objective of this Opinion is to determine whether the subject action is likely to jeopardize the continued existence of the above listed species.

1.2 Proposed Action

The MC/TCSD proposes to improve their water treatment plant facilities by: (1) Construction of a new pumping station, a new headworks (consisting of screening and grit removal facilities), a new oxidation ditch, a new ultraviolet disinfection system, a new standby electric generator, a new outfall and diffuser in the South Umpqua River, a new solids dewatering and storage facility; and (2) conversion of the two contact stabilization basins to aerobic digesters. Work is planned to occur within Myrtle Creek and the South Umpqua River to remove old existing outfall structures and construct new outfall structures.

Remediation of existing outfall structures includes: (1) Capping of the existing effluent outfall in Myrtle Creek; (2) removing a concrete-reinforced water supply pipe; and (3) removing the concrete reinforcement. Before demolition, the site will be isolated by building a coffer dam using sand bags or sheet pile. In-channel work within Myrtle Creek will be required to remove the pipe and concrete. Areas of the streambank that will be disturbed by removal of the pipe and concrete will be filled, recontoured, and replanted with native vegetation. The new outfall pipe will be laid in a trench along an existing road to the ordinary high water (OHW) line. A pipe will run from the end of this line, down into the South Umpqua River's channel to the diffuser in the river. Construction will require the development of a gravel causeway within the South Umpqua River, which will be used as a diversion dam and work platform. A coffer dam will be built around the proposed trench. Blasting or chipping is required to construct a five-foot-deep and five-foot-wide trench in the bedrock streambed. Instream work will occur during the preferred work window of July 1 through August 31 (South Umpqua River), or from July 1 through September 15 (Myrtle Creek). All blasting will be controlled using minimum-size charges and blasting mats, or a granular blanket of material.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

Although limited data are available to assess population numbers or trends, NOAA Fisheries believes that all coho salmon stocks comprising the OC coho salmon evolutionarily significant unit (ESU) are depressed relative to past abundance. The OC coho salmon ESU is identified as all naturally-spawned populations of coho salmon in coastal streams south of the Columbia River and north of Cape Blanco (60 FR 38011, July 25, 1995). Biological information for OC coho salmon can be found in species status assessments by NOAA Fisheries (Weitkamp *et al.* 1995) and by the ODFW (Nickelson *et al.* 1992).

Abundance of wild coho salmon spawners in Oregon coastal streams declined from roughly 1965 to 1975, and has fluctuated at a low level since then (Nickelson *et al.* 1992). Spawning escapements for this ESU may be less than 5% of that in the early 1900s. Contemporary production of coho salmon may be less than 10% of the historic production (Nickelson *et al.* 1992). Average spawner abundance has been relatively constant since the late 1970s, but preharvest abundance has declined. Average recruits-per-spawner may also be declining. The OC coho salmon ESU, although not at immediate danger of extinction, may become endangered in the future if present trends continue (Weitkamp *et al.* 1995). Preliminary findings of the Biological Review Team (BRT 2003) indicate that the recent increase in spawner escapement levels are likely due to good ocean productivity while freshwater productivity continues to decline. Continued degradation of freshwater habitat that results in decreased productivity may lead to localized extinction during the next low ocean productivity cycle (BRT 2003).

The project is near river mile (RM) 39 of the South Umpqua River and within the first 300 feet of Myrtle Creek. The action area in Myrtle Creek includes 300 feet upstream of the old outfall, and 300 feet downstream to it's confluence with the South Umpqua River. Within the South Umpqua River the action area is described as an area starting 300 feet upstream of the causeway construction and then downstream 2500 feet, the potential extent of the turbidity plume and effects of the effluent discharge.

OC coho salmon enter the Umpqua River from September through February and migrate up the system to the tributaries. Spawning typically occurs from late November through early February, depending on the location within the basin. For this area, coho salmon are typically observed spawning near the end of November through early January. In years of drought and low water conditions, coho salmon may spawn in the South Umpqua River due to inaccessible tributaries, but this is not typically the case within the action area of the South Umpqua River. Spawning in Myrtle Creek may occur between the mouth and accessible upstream suitable habitat.

Juvenile coho salmon will spend one year in freshwater before smoltification. These juveniles are typically seeking thermal refugia and cover in smaller tributary streams, but due to declining water discharge in August and September, they are forced into the larger rivers, such as the action area of the South Umpqua River. Some studies have observed downstream dispersal movement soon after emergence (Bradford and Taylor 1997). Kruzic (1998) and Roper (1995) observed juvenile coho salmon leaving the tributaries and entering the mainstem of the South Umpqua River in their studies of the Upper South Umpqua basin. Studies have shown a variety of environmental factors that may influence movement. These factors may include temperature, fish length, lunar cycle, stream discharge, increases in turbidity, food availability, and habitat quality (Kruzic 1998, Bilby and Bisson 1987, Sigler *et al.* 1984, and Hartman *et al.* 1982).

Myrtle Creek provides continuously occupied habitat for OC coho salmon. One coho fry was collected from a fish kill that occurred in the vicinity of the old Myrtle Creek outfall and downstream to the river mouth in August of 2001. The origin of this OC coho salmon juvenile is unknown. This fish may have originated upstream in Myrtle Creek, or was seeking thermal refugia from the South Umpqua River. Documented OC coho salmon presence is also provided by the Bureau of Land Management (BLM) annual mid-March through mid-May sampling with a rotary screw trap. This trap is operated within one hundred yards upstream of the Myrtle Creek outfall, and documents outmigrating smolts as well as movement of fry (BLM 2000). The BLM's 1998 sampling estimated 1440 juveniles passing the trap (782 - 8989; 95% confidence interval). The 1999 estimate was 174 juveniles passing the trap (118 - 332; 95% confidence interval). For 2000, an estimate of 581 juveniles passed the trap (370 - 1354; 95% confidence interval). This information represents movement of the fish spawned that year, therefore, unlike the smolts that have left the action area before project implementation, these juveniles are likely to occur within the action area during implementation.

Freshwater habitat incorporates important components of the environment, such as water, abiotic and biotic physical factors, substrates, stream channel structures, and adjacent riparian areas. Areas adjacent to a stream that provide shade, sediment, nutrient or chemical regulation, streambank stability, and input of LWD or organic matter are important components to OC coho salmon habitat. The project is along the banks and substrate of the South Umpqua River, which provides spawning habitat for fall-run OC chinook salmon (*O. tshawytscha*), rearing habitat for OC chinook salmon and OC coho salmon juveniles, and a migration corridor for adults and smolts of both species. The lower reach of Myrtle Creek provides a migration corridor and rearing habitat for OC coho salmon and OC chinook salmon. Although spawning habitat is available in this area of Myrtle Creek, spawning usually occurs above the old outfall site.

2.1.2 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of defining the biological requirements of the listed species, and evaluating the relevance of the environmental baseline to the species' current status. Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; (3) effects of interrelated and interdependent actions; and (4) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the continued existence of the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action. For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries considers the extent to which the proposed action impairs the function of essential biological and ecological elements necessary for juvenile and adult migration, spawning, and rearing of the listed and proposed species under the existing environmental baseline.

Interrelated actions associated with this project include the change in stream flow within Myrtle Creek due to the removal of the outfall and the effluent discharge. The existing Myrtle Creek outfall lies approximately 300 feet upstream of the confluence with the South Umpqua River. The water discharged from the outfall provides some flow augmentation to the base flow of

Myrtle Creek during winter months. The South Umpqua River will receive more water during winter due to this proposed action. The affected area of the South Umpqua River is approximately 30 feet, that is, the distance from the new upstream effluent diffuser and the confluence with Myrtle Creek. South Umpqua River flows below the confluence with Myrtle Creek will remain the same. The plant's effluent discharge is an interrelated action to this proposed action. Effluent discharged from the diffuser will have some potential for affecting OC coho salmon. In addition, the removal of the effluent from Myrtle Creek will serve to increase water quality in the lower 300 feet of Myrtle Creek.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA to listed salmon is to define the biological requirements of the species most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list OC coho salmon for ESA protection and also considers new data available that are relevant to the determination (Weitkamp *et al.* 1995, BRT 2003).

The relevant biological requirements are those necessary for OC coho salmon to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful spawning, rearing and migration. The current status of the OC coho salmon, based upon their risk of extinction, has not significantly improved since the species was listed and, in some cases their status may have worsened. Freshwater productivity is believed to be continuing to decline, therefore this ESU may face serious risk of local extinction during the next poor ocean cycle (BRT 2003).

2.1.4 Environmental Baseline

Regulations implementing section 7 of the ESA (CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, state, or private actions and other human activities in the action area. The environmental baseline also includes the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation, and the impacts of state and private actions that are contemporaneous with the consultation in progress.

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). Direct effects occur at the project site, and may extend upstream or downstream based on the potential for disturbance, impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian and instream habitat modifications. Indirect effects may occur throughout the watershed where actions lead to additional activities or affect ecological functions contributing to stream degradation. For this consultation, the action area includes the affected streambed, streambank, adjacent riparian zone, and aquatic areas of the South Umpqua River from 300 feet upstream of the causeway to 2500 feet downstream of the causeway. The action area within Myrtle Creek extends 300 feet above the upstream activities (outfall removal) downstream to its confluence with the South Umpqua River.

As in much of the Pacific Northwest, timber harvest, road construction, urbanization, and agricultural development have all had their influence on today's aquatic habitat conditions. This reach of the South Umpqua River is currently listed on the state of Oregon's water quality limited streams for toxics, temperature, aquatic weeds or algae, pH, bacteria, biological criteria, flow modification, and dissolved oxygen (ODEQ 2001). The current South Umpqua River baseline conditions are degraded and considered "not properly functioning" for most indicators of the Matrix of Pathways and Indicators (MPI - NMFS 1996, BA November 2001). The remainder of the MPI indicators were considered "at risk" by the biologist conducting the assessment. The North Fork of Myrtle Creek is currently listed with the state of Oregon's water quality limited streams for habitat modification (ODEQ 2001) and proposed for temperature and ammonia (ODEQ 2002). The ODEQ designates the mainstem of Myrtle Creek as the North Fork of Myrtle Creek. The South Fork of Myrtle Creek, from the mouth to Weaver Creek, is listed for flow modification, and from the mouth to the headwaters is listed for temperature (ODEQ 2001). MPI indicators are likely "not properly functioning" for many of the indicators, but site-specific surveys have not been conducted. Site visits confirm that the ODEQ parameters of concern are likely appropriate for this site.

2.1.5 Analysis of Effects

2.1.5.1 Direct Effects of Proposed Action

Direct harm may occur to OC coho salmon juveniles due to this project's in-water activities. Identified mechanisms and sources of impacts that may cause direct effects to OC coho salmon include: (1) Displacement and harassment from suitable habitat; (2) increased predation; (3) high turbidity; (4) handling of juveniles while draining the coffer dams; (5) blasting; and (6) hazardous materials, such as uncured concrete and petroleum products. The two areas affected are Myrtle Creek and the South Umpqua River.

Project activities that will likely lead to displacement include construction activities in the water, the use of explosives, and increase in turbidity. Displacement of individuals is likely to increase mortality rates due to exposure to higher temperatures. Specifically, project activities that displace individuals from the cooler water of Myrtle Creek to the warmer water of the South Umpqua River increase the mortality risk for OC coho salmon. Displacement of juveniles from deep South Umpqua River pools may also lead to an increased stress and mortality rate. These deep pools in the South Umpqua River can thermally stratify and provide cooler water in their deepest sections. Lacking specific information for these pools, it must be assumed that they stratify, and that displacement of juvenile salmon from these pools may increase mortality from temperature stress. Exposure to high water temperatures increases metabolism and can decrease survival if food is limiting (McCullough 1999). Interspecies competition at higher temperatures also places coho salmon juveniles at a disadvantage (McCullough 1999). Additional physiological responses, and increased susceptibility to parasites and diseases cumulatively result in higher mortality rates for juvenile coho salmon (McCullough 1999).

Displacement due to disturbance and harassment of individual juvenile coho salmon due to heavy equipment is expected to be limited to within the project site and 300 feet upstream and downstream of the activity. Any juveniles outside of this described area are not expected to be affected by the equipment operation. Displacement of individuals due to the high concentration of suspended sediments is also possible. Turbidity increase is expected to be undetectable beyond 2500 feet downstream of the project. Turbidity concentrations high enough to displace individuals is likely to be limited to a shorter reach of stream, perhaps several hundred feet. Shock waves transmitted through the substrate will have a localized effect, and likely limited to an area within 100 feet of the detonation.

Increased vulnerability to predation is another result of displacing juvenile coho from Myrtle Creek. The South Umpqua River is inhabited by smallmouth bass (*Micropterus dolomieu*), northern pikeminnow (*Ptychocheilus oregonensis*), and avian predators. Although these may be present in Myrtle Creek, they are more abundant in the South Umpqua River. Fleeing from Myrtle Creek to the South Umpqua River will likely result in flight response and disorientation that will significantly increase mortality for these juveniles. The flight response within the South Umpqua River will also increase the potential for predation. Feeding behavior of predators can be triggered by this flight response of prey (Martel and Dill 1995).

Inwater blasting has the potential of causing direct take of individual OC coho salmon. Direct effects by blasting in the water is possible if the site is not isolated from inhabited waters. The BA (2001) is not clear concerning how the blasting will be implemented (page 5, section 2.3), but further inquiries (Ron Walz, Brown and Caldwell, personal communication with K. Phippen, January 13, 2003) confirmed the intent is to isolate the site. With dewatering of the trench area before blasting no direct physical damage is expected, but displacement is likely due to the blast.

Hazardous material spills require immediate control to limit the extent of impacts. Spill of petroleum-based materials can rapidly migrate downstream from a site. This problem must be addressed through proactive practices, such as absorbent booms and other control measures. Hazardous materials from fuel spills and equipment failure are potential impact sources. Operation of back hoes and excavators require the use of fuel, hydraulic fluid and lubricants, which, if spilled into the bed or channel of a water body or into the adjacent riparian zone of a water body during project construction, could injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain polycyclic aromatic hydrocarbons (PAHs) which can cause acute toxicity to salmonids at high levels of exposure and can also cause chronic lethal as well as acute and chronic sublethal effects to aquatic organisms (Neff 1985, Hatch and Burton 1999). The EA (2001) states that best management practices will be developed and implemented to minimize exposure to hazardous materials. A site specific hazardous materials spill prevention and counter measures action plan will be developed by the contractor (EA 2001).

Pouring concrete in the vicinity of water increases the risk of killing or injuring juvenile OC coho salmon due to the potential rapid change in water pH due to spilled concrete. This rapid pH change may lead to biochemical shock in the fish. The volume of spill and receiving water will determine the extent of the changes in the local water pH. It is expected that the potential volume of spilled concrete would be minimal due to the coffer dams and control measures to be described in a hazardous materials response plan. By limiting the volume of spill, it is estimated any area outside of 300 feet of the project site would be unaffected.

Both the Myrtle Creek and the South Umpqua River work will include constructing coffer dams to isolate the work sites from flowing water. Pumping water from an area exposes fry to entrainment risk. Proper screening and operation will limit the risk. Salvage of fish from within the coffer dams will be necessary before they are completely drained. The proposed capture of fish through electro-shocking or seining, and subsequent handling increases the risk of injury and mortality to OC coho salmon. Fish removal activities would be in accordance with NOAA Fisheries' fish handling guidelines (NMFS 1998). Any listed fish removed from the isolated work area would experience high stress, with the possibility of up to a 5% delayed mortality rate, depending on rescue method. Handling stress is also likely to increase due to the high turbidity generated from Myrtle Creek's fine sediment substrate. Higher water temperature increases this mortality rate due to the higher stress levels. A combination of high temperatures, high turbidity, and elevated stress levels will work as a negative synergistic effect (McCullough 1999). In addition, sediment-laden water created within isolated work areas could escape, resulting in impacts to the aquatic environment downstream of the project site. Delayed mortality of the handled juvenile coho salmon is expected to range from 5 to 10% due to the synergistic effects of these different stressors.

2.1.5.2 Indirect Effects of Proposed Action

Indirect effects are expected to be related to: (1) Reductions in macroinvertebrates (forage for juvenile OC coho salmon) due to turbidity, toxic substances, dewatering within coffer dams, and covering with fill for the causeway construction; and (2) effects to riparian vegetation. These effects may be minimized by implementing the proposed project design features that reduce risk of accidents, provide timely and efficient clean-up in case of an accident, and provide recovery of riparian vegetation and associated ecological values.

An indirect effect of this project on OC coho salmon juveniles is a potential reduction of aquatic macroinvertebrates that would result in less forage. Macroinvertebrate populations may be reduced by the effects of toxic substances, such as petroleum product spills (Hatch and Burton 1999, Ireland *et al.* 1996) and wet cement. Toxicity of PAHs to macroinvertebrates increases with the organisms exposure to ultraviolet light, which would be exacerbated during low summer flows (Ireland *et al.* 1996, Hatch and Burton 1995, Monson *et al.* 1995). High levels of turbidity may also kill the macroinvertebrates, but this is less likely due to the nature of the existing habitat and the likelihood that sediment-tolerant species predominate the population. Construction of the causeway and cofferdams will have the greatest impact to macroinvertebrates. Although the other sources pose a potential risk, these two activities will result in the covering or drying out of the substrate. The causeway will cover approximately 0.07 acres of aquatic habitat. The exact size of the coffer dams is unknown, but information within the Corps permit suggests they will cover between 0.02 and 0.03 acres. The combination of less forage and high temperatures can result in increased mortality (McCullough 1999). Mortality rates from food limitations may be mitigated by recolonization rates, which are expected to be rapid. Recolonization will not occur until after the project is completed and the fill and coffer dams removed, therefore, for the duration of this time, some level of effect is expected from reduced available forage.

Some riparian vegetation will be removed along the banks of Myrtle Creek. Myrtle Creek is extensively shaded by hardwood tree species, therefore the riparian vegetation loss is not expected to be large enough to result in increased stream temperatures. Some loss of allochthonous nutrients should be expected. A small reduction in available vegetative matter, as well as terrestrial insects, will result in a slightly lower nutrient load.

2.1.5.3 Interrelated Actions

Interrelated actions of the proposed action include the changes in water quantity within Myrtle Creek and the South Umpqua River due to changes in effluent discharge location and patterns, as well as the effects from the constituents and temperature of the discharge effluent. Effects will vary by season due to the differences in operations. Two components of the effluent discharge issue are the zone of initial dilution (ZID) and the regulatory mixing zone (RMZ). The ZID is an area defined to take the maximum concentrations of effluent and provide rapid mixing. The RMZ is established by the state of Oregon, and is an area within the effluent receiving water designed to rapidly mix effluent and river water so that ammonia concentrations will fall below the threshold for chronic toxicity before leaving the designated area.

Summer or dry season (May through October) low flow discharge implementation has varied over the last several years. Due to the previously described fish kill, the treatment plant changed the discharge point of their summer effluent from Myrtle Creek to the golf course in 2001. The proposed action will not change the summer flow baseline of Myrtle Creek. The South Umpqua River summer flows are not expected to be augmented by the new plant operation. Due to temperature loading allocations (Brown and Caldwell 2002), summer effluent is expected to be pumped to the golf course.

Winter (November through April) base flows within Myrtle Creek have been augmented by the treatment plant's effluent discharge. In Western Cascade streams, such as Myrtle Creek and the South Umpqua River, winter base flows are not considered a limiting factor for the survival of coho salmon. Any reduction in the winter base flow of Myrtle Creek is not expected to affect OC coho salmon. Any increase in winter base flow for the South Umpqua River would only change the quantity of flow within the South Umpqua River between the new diffuser location and the confluence with Myrtle Creek, approximately 30 feet. This quantity of increased flow and this small area affected would not result in an effect to coho salmon.

Potential changes in water temperature due to the changes made by this proposed action were assessed in a draft temperature management plan (Brown and Caldwell 2002). Based on these preliminary plans, effluent discharge during the winter is expected to remain within the prescribed state of Oregon standard of 64 degrees Fahrenheit (F). This is expected to be true at the edge of the RMZ. Properly functioning stream temperatures for salmonids are identified as 50 to 57 degrees F (NMFS 1996). Project projections used 64 degrees F as the expected goal, placing this in the "at risk" category for migration and rearing. Based on this draft plan, it is predicted the plant could not prevent additional increases in summer thermal loading, therefore effluent produced during the summer would not be discharged into the South Umpqua. The proposed project operation plan is expected to maintain the water temperature at its present condition outside of the RMZ.

Within the RMZ, the most significant concern would be thermal plume impacts. Thermal plume impacts could occur primarily within the ZID. Mortality resulting from thermal shock from the plume may be due to increased vulnerability to predation (Coutant 1973). An assessment compared the MC/TCSD effluent temperature to the influent temperature and determined that the winter discharge temperature was not significantly different (Brown and Caldwell 2002). Based on this assessment, the thermal plume of MC/TSD's effluent is not expected to increase the mortality rate of OC coho salmon.

The new plant's treatment facility will eliminate chlorine discharge problems experienced with the current facility, therefore, effluent discharged to the South Umpqua River will be less detrimental to coho salmon. Effluent intended to be discharged to the South Umpqua River will be treated using ultraviolet disinfection. Effluent water going to the golf course for reuse will be treated with chlorine.

Ammonia toxicity is a potential concern for coho salmon exposed to municipal wastewater. Ammonia discharge concentration is expected to fall to non-toxic levels at the edge of the ZID for the maximum concentration and at the edge of the RMZ for chronic concentration. The RMZ is identified as a zone covering an area 10 feet upstream of the diffuser, to 300 feet downstream, and cannot exceed 50% of the stream width. The ZID is described as a zone extending no more than 30 feet downstream of the diffuser. Based on the model predictions, ammonia concentration will fall below the threshold for chronic toxicity within 10 feet of the diffuser (Brown and Caldwell 2002). This will be within a much smaller area than that described by the RMZ. The model (CORMIX - Brown and Caldwell 2001) also predicts a rapid dilution and mixing of effluent and river water within three feet of the diffuser. Both the ZID and RMZ dilution goals are predicted to be met within this small area.

Although the proposed ammonia concentrations outside of the RMZ may have minimal affect on coho salmon, an unpredictable risk is present inside the RMZ and an even higher risk inside the

ZID. Coho salmon may avoid the ZID while ammonia is being discharged in the effluent, the greatest risk would be at the time of initial discharge where a fish may be holding within the area around the diffuser. The risk to coho salmon that may be holding within the ZID at the time of discharge is dependent on the acute toxicity levels. Ammonia may have a variety of deleterious effects on coho salmon. These effects include tissue damage of gills (Burrows 1964 in Wicks *et al.* 2002), energy metabolism (Arillo *et al.* 1981), and ionic balance (Soderberg and Meade 1992) as well as damage to other body cells (Wicks *et al.* 2002). Damage to the central nervous system from acute ammonia intoxication can result in convulsions and death (Randall and Tsui 2002). Elevated ammonia levels in the brain may lead to a variety of biochemical and physiological responses that lead to neuron damage and cell death (Randall and Tsui 2002). Stress and swimming also increase sensitivity to ammonia toxicity (Shingles *et al.* 2001, Wicks *et al.* 2002, Wicks and Randall 2002, Randall and Tsui 2002). Given these various deleterious effects from exposure to ammonia, coho salmon that may enter the RMZ or ZID could be affected by the effluent. This area is primarily a migration route for adults and smolts, therefore these two life stages are at greatest risk. The extent of this risk is unknown due to the lack of information available.

Macroinvertebrate populations may be reduced due to chronic and acute ammonium/ammonia levels (Berenzen *et al.* 2001, Kosmala *et al.* 1999), resulting in additional indirect effects to coho salmon (Wicks and Randall 2002) from reduced forage and increased sensitivity to ammonia. Populations within the ZID would be most affected, but chronic levels may also affect the populations within the RMZ. Although this area is generally considered a migration route for adult and smolt coho salmon, it is believed this area also provides seasonal rearing habitat for transient juvenile coho salmon. Reduction in forage availability can decrease growth and increase mortality, especially when combined with rising water temperatures (McCollough 1999).

A factor to consider with municipal wastewater treatment plant effluent is the biochemical oxygen demand (BOD). The MC/TCSD submitted a mass load increase request to the ODEQ. Although the new plant will increase efficiency in handling BOD, the plant is expected to increase effluent volume over the project design life. Projected increases in wet weather design flow calculated an increase from 160 pounds per day (lb/d) to approximately 317 lb/d. Modeling (QUAL2E) was conducted by ODEQ (2002) to determine if the proposed mass load increase in the effluent discharge would decrease instream dissolved oxygen (DO) concentrations. The model calculations concluded the mass load increases would decrease DO by less than 0.1 milligrams per liter (mg/L). This decrease by ODEQ definition is considered “no measurable decrease” when it is less than 0.1 mg/L. Due to these findings and the fact that loading will only occur within the wet season (November through April), minimal effects on coho salmon are expected.

The effluent discharge goal for phosphorus is less than 0.60 mg/L, which will require a “staged discharge relationship” (EA 2001). Phosphorus discharge levels will then be adjusted with corresponding stream flows to maintain the phosphorus concentrations. Over the life of the project this new diffuser will discharge 91% less phosphorus than the current treatment plant discharge. The new plant's effluent will be an improvement over current operations.

2.1.5.4 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Other activities within the watershed have the potential to impact fish and habitat within the action area. Future Federal actions, including the ongoing operation of land management activities that are being (or have been) reviewed through separate section 7 consultation processes.

Non-Federal activities within the action area are expected to slightly increase. Although there is a projected 34% increase in human population over the next 25 years in Oregon (ODAS 1999), the area upstream of this site is not expected to follow this rapid population growth. Surrounding uplands are primarily agricultural land, small communities, rural homes, small wood lot owners, and industrial timber land. Projected growth rate for the Myrtle Creek area is 2.5% (EA 2001). Thus, NOAA Fisheries assumes that future private and state actions will continue within the action area, at slightly increased levels due to population growth.

2.1.6 Conclusion

After reviewing the current status of OC coho salmon, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, the NOAA Fisheries has determined that the MC/TRSD Wastewater Treatment Plant Improvement Project, as proposed, is not likely to jeopardize the continued existence of OC coho salmon. This finding is based, in part, on incorporation of the project design criteria into the proposed project design, (*i.e.*, ODFW in-water work window, site revegetation, construction of coffer dams, development and implementation of a spill prevention and countermeasure or pollution control plan, and providing sufficient time for concrete to cure), but also on the following considerations: (1) All explosive detonations will occur within the dewatered area of the coffer dams; (2) all capture, handling, and relocation of OC coho salmon will follow NOAA Fisheries' guidelines; (3) the South Umpqua River is used primarily as a migration corridor for adult and smolt OC coho salmon; (4) the new treatment plant will eliminate chlorinated discharge water and reduce current phosphorus loading over the life of the project; (5) the RMZ and ZID pose an unquantifiable risk to migrating adult and smolt salmon, but the risk is not expected to significantly disrupt migration; (6) the potential thermal plume is not expected to be significantly higher than the receiving river water temperature; and (7) the proposed action will not appreciably reduce the functioning of the ESU's already impaired habitats, or retard the long-term progress of impaired habitats toward properly functioning condition (PFC), and may improve some indicators within Myrtle Creek and the South Umpqua River.

2.1.7 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of proposed actions on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NOAA Fisheries believes that the following conservation recommendation regarding the MC/TRSD treatment plant update and outfall effluent diffuser construction should be forwarded to the project proponent:

> Water quality sampling within the ZID and RMZ should be conducted to determine potential risk to threatened OC coho salmon. Parameters of interest should be temperature (thermal plume assessment), ammonia (acute toxicity), and dissolved oxygen.

In order for NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed salmon and steelhead or their habitats, we request notification of the achievement of any conservation recommendations when the UNF submits its annual report describing achievements of the fish monitoring program during the previous year.

2.1.8 Reinitiation of Consultation

This concludes formal consultation on this action in accordance with 50 CFR 402.14(b)(1). Reinitiation of consultation is required: (1) If the amount or extent of incidental take is exceeded; (2) the action is modified in a way that causes an effect on the listed species that was not previously considered in the BA and this Opinion; (3) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2.2. Incidental Take Statement

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. "Incidental take" is take of listed animal species that results from, but is not the purpose of, the federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

2.2.1 Amount or Extent of Take

NOAA Fisheries anticipates that the proposed action covered by this Opinion is reasonably certain to cause incidental take of juvenile OC coho salmon resulting from the disturbance and displacement of individuals due to: (1) The use of equipment and blasting in the South Umpqua River and Myrtle Creek; (2) displacement of individuals due to elevated turbidity levels; (3) exposure to hazardous materials; and (4) handling of fish by seining or electroshocking within the coffer dams. The effects of these activities on population levels are largely unquantifiable and not expected to be measurable in the long term. Therefore, even though NOAA Fisheries expects some low level of non-lethal incidental take to occur due to the habitat-related effects of the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific number of individual fish taken. In instances such as this, NOAA Fisheries designates the expected level of take in terms of the extent of take allowed. Here, NOAA Fisheries limits the area of allowable incidental take during construction to the distance from the action site in the South Umpqua River downstream for a distance of 2500 feet and upstream of the site for a distance of 300 feet. Within Myrtle Creek, the incidental take area applies to 300 feet upstream of the project site and downstream to its confluence with the South Umpqua River. Incidental take occurring beyond these areas is not authorized by this consultation. During capture and release of fish as part of the work area isolation process, it is unlikely that more than 100 juvenile OC coho salmon will be handled. Therefore, incidental take due to this part of the action shall not exceed 10 juvenile OC coho salmon based on an estimated 10% mortality rate.

The act of discharging effluent into the South Umpqua River is subject to take prohibitions of section 9 and rules promulgated under section 4(d) of the ESA.

2.2.2 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species.

1. Minimize the likelihood of incidental take associated with impacts to riparian and instream habitats by avoiding or replacing lost riparian and instream functions.

2. Minimize the likelihood of incidental take from construction activities in or near watercourses by implementing pollution and erosion control measures.

3. Minimize the likelihood of incidental take associated with instream work by restricting work to recommended in-water work periods.

4. Minimize the likelihood of incidental take associated with rock blasting by ensuring all protective measures are followed to control the blast shockwaves.

5. Minimize the likelihood of incidental take associated with the capture and handling of individual OC coho salmon juveniles by following accepted guidelines.

6. Monitor the effectiveness of the proposed conservation measures in minimizing incidental take and report to NOAA Fisheries.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (instream and riparian habitat function), the Corps shall ensure that:

    a. Flag boundaries of the clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
    b. Complete site restoration and clean up, including protection of bare earth by seeding, planting and mulching in the following manner:
        i. Plant-disturbed areas with native vegetation specific to the project vicinity or the region of the state where the project is found, using a diverse assemblage of woody and herbaceous species.
        ii. Do not apply herbicide as part of this permitted action.
        iii. Achieve an 80% survival success of planting after three years.
        iv. If success standard has not been achieved after three years, prepare an alternative plan to address temporal loss of function.
        v. Monitor establishment of planting until 80% survival has been achieved.

2. To implement reasonable and prudent measure #2 (construction), the Corps shall ensure that a pollution and erosion control plan (PECP) is developed for the project to prevent point-source pollution related to construction operations containing all of the pertinent elements listed below, and meeting requirements of all applicable laws and regulations.
    a. Describe methods that will be used to prevent erosion and sedimentation associated with access roads, construction sites, equipment and material storage sites, fueling operations and staging areas. Fuel, maintain and store heavy equipment as follows:

i. Place vehicle staging, maintenance, refueling, and fuel storage areas at least 150 feet horizontal distance from any stream.
ii. Inspect all vehicles operated within 150 feet of any stream or water body daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected before the vehicle resumes operation.
iii. When not in use, store vehicles in the vehicle staging area.

b. Describe hazardous products or materials that will be used, including procedures for inventory, storage, handling, and monitoring.
c. Develop a spill containment and control plan with these components:
    i. Notification procedures;
    ii. specific clean up and disposal instructions for different products;
    iii. quick response containment and clean up measures;
    iv. proposed methods for disposal of spilled materials; and
    v. employee training for spill containment.
d. Install an absorbent boom downstream of the project site before project implementation and maintain the boom throughout the in-water work phase.
e. Stockpile a supply of erosion control materials (*e.g.*, silt fence and straw bales) on-site to respond to sediment emergencies. Use sterile straw or hay bales when available to prevent introduction of weeds.
f. Install all temporary erosion controls (*e.g.*, straw bales, silt fences) downslope of project activities within the riparian area. Keep them in place and maintained throughout the contract period, and until permanent erosion control measures are effective.
g. Where fertilizer can wash into the river, fertilizer should not be used within 50 feet of the river.

3. To implement reasonable and prudent measure #3 (instream work), the Corps shall ensure that:

    a. All in-water work will be completed within the ODFW approved in-water work period (July 1 - August 31). Extensions of the in-water work period should not be anticipated except under extenuating circumstances and must be approved in advance by NOAA Fisheries in writing.

4. To implement reasonable and prudent measure #4 (blasting), the Corps shall ensure that:

    a. All blasting occurs within the dewatered area of the coffer dams.
    b. If multiple charges are needed along the length of the proposed trench, a minimum of a 25-millisecond delay would occur between the detonation of each hole's charge. The intent of this delay is to ensure that the peak pressure wave caused by the detonation of each charge is not increased in magnitude by the persistence of the pressure wave created by the previous explosion.

5. To implement reasonable and prudent measure #5 (isolation of in-water work area and proper fish handling methods), the Corps shall ensure that:

   a. In-water work. During in-water work (work within the OHW mark), if the project involves either significant channel disturbance or use of equipment within the wetted channel, the work area should be well isolated from the active flowing stream within a cofferdam (made out of sand bags, sheet pilings, inflatable bags, *etc.*) or similar structure, to minimize the potential for sediment entrainment. Furthermore, no ground or substrate disturbing action will occur within the OHW mark 300 feet upstream of potential spawning habitat as measured at the thalweg without isolation of the work area from flowing waters. After the coffer dam is in place, any fish trapped in the isolation pool will be removed by a permitted ODFW biologist before de-watering, using NOAA Fisheries' guidelines.
   b. Water Intake Structures. Any water intake structure authorized under this Opinion must have a fish screen installed, operated and maintained in accordance to NOAA Fisheries' fish screen criteria.
      i. Water pumped from the work isolation area will be discharged into an upland area providing over-ground flow before returning to the creek. Discharge will occur so that it does not cause erosion.
      ii. Discharges into potential fish spawning areas or areas with submerged vegetation are prohibited.
   c. Fish Salvage.
      i. Before, and intermittently during, pumping attempts will be made to salvage and release fish from the work isolation area as is prudent to minimize risk of injury. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:
         (1) Seining will be conducted by or under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.
         (2) ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary to prevent the added stress of an out-of-water transfer.
         (3) Seined fish must be released as near as possible to capture sites (preferably Myrtle Creek).
         (4) The transfer of any ESA-listed fish from the applicant to third-parties other than NOAA Fisheries personnel requires written approval from NOAA Fisheries.
         (5) The applicant must obtain any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities.

(6) The applicant must allow NOAA Fisheries, or its designated representative, to accompany field personnel during the seining activity, and allow such representative to inspect the applicant's seining records and facilities.

(7) A description of any seine and release effort will be included in a post-project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers, the means of fish removal, the number of fish removed by species, the condition of all fish released, and any incidence of observed injury or mortality.

ii. If the fish salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as follows (NMFS 1998):

(1) Electrofishing may not occur in the vicinity of listed adults in spawning condition or in the vicinity of redds containing eggs.

(2) Equipment must be in good working condition. Operators must go through the manufacturer's preseason checks, adhere to all provisions, and record major maintenance work in a log.

(3) A crew leader having at least 100 hours of electrofishing experience in the field using similar equipment must train the crew. The crew leader’s experience must be documented and available for confirmation; such documentation may be in the form of a logbook. The training must occur before an inexperienced crew begins any electrofishing, and it must also be conducted in waters that do not contain listed fish.

(4) Measure conductivity and set voltage as follows:

Conductivity (umhos/cm)	Voltage
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

(5) Direct current (DC) must be used at all times.

(6) Each session must begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500us and do not exceed 5 milliseconds. Pulse rate should start at 30Hz and work carefully upwards. In general, pulse rate should not exceed 40 Hz, to avoid unnecessary injury to the fish.

(7) The zone of potential fish injury is 0.5m from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated because in such areas the fish are more likely to come into close contact with the anode.

(8) The monitoring area must be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.

(9) Crew must carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Sampling must be terminated if injuries occur or abnormally long recovery times persist.

(10) Whenever possible, a block net must be placed below the area being sampled to capture stunned fish that may drift downstream.

(11) The electrofishing settings must be recorded in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, together with observations on fish condition, will improve technique and form the basis for training new operators.

d. Fish Passage. Full passage shall be provided for both adult and juvenile forms of salmonid species throughout the construction period.

6. To implement reasonable and prudent measure #6 (monitoring), the Corps shall ensure that:

a. Comprehensive monitoring will occur, and prepare a post-project report to ensure that these terms and conditions meet their objective of minimizing the likelihood of adverse effects to OC coho salmon. Monitoring requirements include:

i. Submit a report to NOAA Fisheries within 120 days of completing the project. Describe the Corps' success meeting conservation recommendations above. Include the following information.

(1) Project identification.

(a) Project name.

(b) Starting and ending dates of work completed for this project.

(c) The Corps contact person.

(2) Pollution and erosion control. A summary of all pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

(3) Site restoration. Documentation of the following conditions:

(a) Finished grade slopes and elevations.

(b) Log and rock structure elevations, orientation, and anchoring, if any.

(c) Planting composition and density.

(d) A plan to inspect and, if necessary, replace failed plantings and structures as required in 1(e).

(4) A narrative assessment of the effects of the project and compensatory mitigation on natural stream function.
(5) Photographic documentation of environmental conditions at the project site before, during and after project completion.
(6) Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
(7) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
(8) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

b. Submit monitoring reports to:

NOAA Fisheries
Oregon Habitat Branch
Attn: 2002/00376
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

c. If dead, injured, or sick endangered or threatened species specimen is found, initial notification must be made to NOAA Fisheries' Law Enforcement Office, at the Roseburg Field Office, 2900 NW Stewart Parkway, Roseburg, Oregon 97470; phone 541.957.3388. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed.

3. MAGNUSON-STEVENS ACT

3.1 Magnuson-Stevens Fishery Conservation and Management Act

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook, coho, and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.3 Proposed Action

The proposed action is detailed above in section 1.2 of this document. The action area includes a reach of the South Umpqua River near RM 39. This area has been designated as EFH for various life stages of chinook salmon and coho salmon.

3.4 Effects of Proposed Action

As described in detail in section 2.1.5 of this document, the proposed activity may result in detrimental short- and long-term adverse effects to a variety of habitat parameters. These impacts include:

1. Turbidity. Excavation in the wetted channel and placement of fill may result in short-term releases of sediment. An increase in turbidity can impact fish and filter-feeding macro-invertebrates downstream of the work site.

2. Chemical Contamination. As with all construction activities, accidental release of fuel, oil, and other contaminants may occur.

3. Riparian Vegetation. Removal of existing riparian vegetation will reduce some allocthonous contribution of nutrients and terrestrial insects.

4. Dewatering Habitat. Within the coffer dams, stream substrate will be dewatered and impacts to macroinvertebrates will occur.

5. Covering Stream Substrate. Within the “footprint” of the constructed causeway, all invertebrates inhabiting the stream substrate will be killed and lost as a food source for juvenile OC coho salmon and juvenile OC chinook salmon.

3.5 Conclusion

NOAA Fisheries believes that the proposed action will adversely affect the EFH for Pacific salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the DSWCD and all of the reasonable and prudent Measures and terms and conditions contained in sections 2.2.2 and 2.2.3 are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.7 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.8 Supplemental Consultation

The Corps must reinitiate EFH consultation with NOAA Fisheries if the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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